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Side-effects and phosphorothioates

To the editor:

I would like to clarify a point in the encouraging Feature article entitled "Antisense and Sensibility?" published in the February issue (*Nat. Biotechnol.* **20**, 121, 2002). Phosphorothioates are correctly cited as the first generation of antisense oligonucleotides. Although it is true that these oligonucleotides are usually associated with undesirable side effects, second-generation oligonucleotides, such as methoxyethyl constructs, also rely on this modification for *in vivo* application. Moreover, the immune-stimulating CpG oligonucleotides currently used for clinical trials also contain them. For some reason, the side effects are not apparent in the second-generation context, and not with the CpG oligomers because of the very low concentrations needed.

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Scientists from Mars, consumers from Venus

To the editor:

In their commentary "Nontransgenic crops from transgenic plants" from the March issue (*Nat. Biotechnol.* **20,** 215–216, 2002), Keenan and Stemmer propose an idea to mitigate public concern over transgenic plants by deleting the offending inserted DNA. While I applaud their efforts to mollify anxious consumers, I hasten to remind them, and other similarly inclined scientists, that most people opposed to transgenic plants are worried not so much about the physical presence of "foreign" DNA in the food (we eat that all the time) but by the process of genetic engineering. This is the heart of the concern: rational scientists tend to be product oriented, and strive to address a concern by changing the product (in this case, removing DNA). But the anxious, subjectively minded non-scientists are concerned with the process: the mere fact that the plant, or its ancestors, had been subject to such intrusive human alterations is the source of their fear. If anything, the additional manipulations suggested by Keenan and Stemmer, as well intentioned as they are, will only serve to intensify and reinforce the anxiety of these consumers wary of human intervention in their foods.

There is no objective solution to a subjective problem. Fortunately or unfortunately, scientific fact does not conform to the whim of democracy or public opinion. The use of science to appease irrational fears is not only doomed to fail, it jeopardizes the credibility of scientific rationality. I would prefer that our scientists continue using their skills to make products safer for humans and the environment.

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